

## REMARKS

Favorable reconsideration and allowance of the claims presented herein in view of the foregoing amendments and the following remarks are respectfully requested.

Claims 1 and 19-47 are pending in this application. By this Amendment, Claims 1, 30 and 35 have been amended to more clearly define components A and B of the presently claimed adhesive composition and new Claims 48-50 have been added to particularly point out an additional embodiment. Applicants attach Appendix A herewith containing a marked up version of original Claims 1, 30 and 35. Support for this amendment can be found throughout the specification and in the working example. No new matter has been added to the subject application.

The Examiner has rejected Claims 1, 19, 20, 22-41, 43-45 and 47 under the first paragraph of 35 U.S.C. §112 as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. It is the Examiner's belief that support for component A that comprises an aromatic-containing polyester is not apparent. Specifically, the Examiner alleges that the subgenus of aromatic-containing polyesters is not described in the specification as filed in that the only species of aromatic-containing polyesters described for use in the invention are those synthesized from an aromatic polycarboxylic acid, and aliphatic polycarboxylic acid and an alcohol component. (See the specification at page 9, line 26 through page 14, line 16 and examples). Thus, the Examiner

maintains that "since the application as filed contained neither a description of the subgenus aromatic-containing polyesters nor a description of species that in the aggregate amount to the same thing, it does not support a subgenus of aromatic-containing polyesters as component A." (citing *In re Welstead* 174 USPQ 449 (CCPA 1972)).

The present case is clearly distinguishable from *Welstead*. In *Welstead*, the applicant was attempting to introduce into his claims a new subgenus where the specification contained neither a description of the subgenus nor descriptions of *any species* thereof which amount in the aggregate to the same thing. In fact, *Welstead* conceded that the specification contained no disclosure of compounds or examples of making the new subgenus.

In contrast to *Welstead* and the Examiner's contention that the application as filed does not contain a description of species that in the aggregate amount to the subgenus of aromatic-containing polyesters as presently recited in Claims 1, 30 and 35, Applicants submit that the subgenus as presently claimed, "component A comprises at least one aromatic-containing polyesters with a molecular weight ( $M_n$ ) of at least 8000", is fully supported by the specification. This is evidenced from, e.g., page 9, lines 9-11 where it is stated "component A contains a polyester which is synthesized from at least a first and a second acid component and at least a first alcohol component" and further on page 10, lines 24-26 where it is stated that component A or component B or component A and component B is/are synthesized from an aromatic acid component as a first acid component. Additionally, the specification sets forth on page 9, lines 26-28 that any aromatic polycarboxylic acids suitable for the synthesis of polyesters having the

properties required for components A and B may be used as a first or second acid component and then further defines the aromatic polycarboxylic acids as those containing about 6 to about 24 carbon atoms with examples of such aromatic polycarboxylic acids (see page 10, lines 20-23). Finally, the specification provides working examples of how the aromatic-containing polyester subgenus is made. As such, one skilled in the art of chemistry would recognize from a reading of the application that the resulting polyester formed from these components in the aggregate amount to an aromatic-containing polyester. Thus, contrary to the Examiner's assertions, such aromatic-containing polyesters having a molecular weight ( $M_n$ ) of at least 8,000 of component A having a total enthalpy of fusion of at most 20 mJ/mg are fully described by the specification. Such being the case, the expression "aromatic-containing polyester" in the claims herein is believed to be fully supported by the specification as to comply with the requirements for the first paragraph of 35 U.S.C. §112.

It is also submitted by the applicants that the claimed expression "component A comprises a polyester synthesized from at least an aromatic-containing first acid component; a second acid component and at least a first alcohol component" of Claim 19 is fully supported by the specification. Based on the disclosure set forth on lines 9-11 and 26-28 of page 9 discussed above and further on page 10, lines 24-26 where it is stated that "component A or component B or component A and component B is/are synthesized from *an aromatic acid component as a first acid component*", one skilled in the art would readily recognize that the first acid component can be an aromatic-containing first acid component by reading the specification. Accordingly, Claim

19 as presented herein is believed to be fully supported by the specification as to comply with the requirement for the first paragraph of 35 U.S.C. §112.

It is still further submitted by the applicants that the claimed expression "component A is synthesized from at least one aromatic polycarboxylic acid as a first acid; a second acid selected from the group consisting of aromatic polycarboxylic acids, aliphatic polycarboxylic acids and mixtures thereof and an alcohol" of Claims 38-41, 44 and 45 is fully supported by the specification. It is specifically stated on page 9, lines 26-28 that "any aliphatic and aromatic polycarboxylic acids suitable for the synthesis of polyesters having the properties required for components A and B may be used as a first and second acid component." Such being the case, one skilled in the art would readily understand the applicants to be in possession of the specifically recited expression of Claims 38-41, 44 and 45 by reading the specification.

Accordingly, Claims 38-41, 44 and 45 as presented herein are believed to be fully supported by the specification as to comply with the requirements for the first paragraph of 35 U.S.C. §112.

The Examiner has rejected Claims 1 and 19-47 under 35 U.S.C. §103(a) as being obvious over Miller et al. U.S. Patent No. 5,552,495 ("Miller").

Amended Claims 1, 30 and 35 presently recite an adhesive composition comprising component A having a total enthalpy of fusion of at most 20 mJ/mg and component B having a glass transition temperature of at most 60°C in which (a) component A comprises at least one aromatic containing polyester with a molecular weight ( $M_n$ ) of at least 8,000; and (b) component B comprises at least one polyester with a molecular weight ( $M_n$ ) of less than 8,000, the adhesive

having a melt viscosity of 500 to 25,000 mPas (Brookfield RVT DVII, 140°C, spindle 27) and a softening point of 70 to 100°C (ASTM E28).

In contrast thereto, Miller discloses sulfonate-containing, water-dispersible adhesive compositions having a number average molecular weight from about 2,000 to about 20,000 formed from either a single polyester, or a blend of polyesters. At no point, however, is there any disclosure, suggestion or even a hint in Miller of combining (1) component A having a total enthalpy of fusion of at most 20 mJ/mg and comprising an aromatic-containing first polyester with a  $M_n$  of at least 8,000 with (2) component B having a glass transition temperature of at most 60°C and comprising a second polyester with a  $M_n$  of less than 8,000 to form an adhesive composition. This is further illustrated from the examples in Miller. Examples 1-4 each prepared single polyester adhesive compositions while Examples 1B-6B prepared adhesive compositions having a  $M_n$  significantly less than 8,000 from a blend of polyesters, e.g., from a low of 1,563 for the resulting adhesive of example 4B to a high of 5,422 for the resulting adhesive of example 1B. In fact, Miller further states in the abstract that the water-dispersible adhesive composition is preferably a low molecular weight, branched copolyester. Thus, there is simply no appreciation in Miller of combining an aromatic-containing polyester having a  $M_n$  of at least 8,000 with a polyester having a  $M_n$  of less than 8,000. Accordingly, nothing in Miller would motivate one skilled in the art to modify the disclosure of Miller and arrive at the presently claimed adhesive composition.

The Examiner alleges in the Office Action that Miller discloses an adhesive composition comprising a blend of amorphous polyesters that have an inherent viscosity from 0.1 to 0.6 and a Tg below 60°C wherein the number average ( $M_n$ ) molecular weight of the adhesive composition can be as high as 20,000 with a preferred molecular weight as high as 10,000. (See col. 5, line 3 through col. 9, line 52). The Examiner further alleges that while lower molecular weight adhesives are preferred for wider application, higher molecular weight adhesives have higher tensile strength and peel strength. (See col. 8, lines 47-54). Thus, according to the Examiner, it would have been obvious to selected a polyester having a number average molecular weight above 8,000 as one of the amorphous polyesters and use in combination with an amorphous polyester having a molecular weight below 8,000 and a Tg below 60°C in order to obtain adhesives having higher molecular weights and improved tensile strength and peel strength.

These wholly unsupported statements cannot possibly serve as a basis for this rejection. As discussed above, Miller provides no suggestion or motivation to combine an aromatic-containing polyester with a  $M_n$  of at least 8,000 with a second polyester with a  $M_n$  less than 8,000. In fact, column 8, lines 47-54 of Miller, which is erroneously relied upon by the Examiner in the Office Action as motivation to choose a high molecular weight polyester with a low molecular weight polyester to form an adhesive, is concerned with the molecular weight of the resulting adhesive and not at all with the specifically recited molecular weights of the respective polyester components. Thus, no *prima facie* case of obviousness has been established.

With respect to new Claims 48-50, nowhere does Miller disclose or suggest an adhesive composition comprising component A having a total enthalpy of fusion of at most 20 mJ/mg and component B having a glass transition temperature of at most 60°C wherein the composition comprises, *inter alia*, at least one aromatic-containing polyester with a molecular weight ( $M_n$ ) of at least 8000 *consisting essentially of* (i) a first acid selected from the group consisting of succinic acid, glutaric acid, adipic acid, pimelic acid, suberic acid, azelaic acid, sebacic acid, maleic acid, fumaric acid, cyclohexane dicarboxylic acid, cyclohexene dicarboxylic acid, cyclohexadiene dicarboxylic acid, endomethylene hexahydrophthalic acid, cyclohexane tricarboxylic acid, anhydrides thereof, esters thereof with an alcohol containing from 1 to about 5 carbon atoms, phthalic acid, o-phthalic acid, isophthalic acid, terephthalic acid, trimellitic acid, and combinations thereof; (ii) a second acid selected from the group consisting of succinic acid, glutaric acid, adipic acid, pimelic acid, suberic acid, azelaic acid, sebacic acid, maleic acid, fumaric acid, cyclohexane dicarboxylic acid, cyclohexene dicarboxylic acid, cyclohexadiene dicarboxylic acid, endomethylene hexahydrophthalic acid, cyclohexane tricarboxylic acid, anhydrides thereof, esters thereof with an alcohol containing from 1 to about 5 carbon atoms, phthalic acid, o-phthalic acid, isophthalic acid, terephthalic acid, trimellitic acid, and combinations thereof; and (iii) at least one alcohol, wherein at least one of the first acid or second acid is an aromatic-containing acid; and at least one polyester with a molecular weight ( $M_n$ ) of less than 8000 *consisting essentially of* (i) a first acid selected from the group consisting of succinic acid, glutaric acid, adipic acid, pimelic acid, suberic acid, azelaic acid, sebacic acid, maleic acid, fumaric acid, cyclohexane

dicarboxylic acid, cyclohexene dicarboxylic acid, cyclohexadiene dicarboxylic acid, endomethylene hexahydrophthalic acid, cyclohexane tricarboxylic acid, anhydrides thereof, esters thereof with an alcohol containing from 1 to about 5 carbon atoms, phthalic acid, o-phthalic acid, isophthalic acid, terephthalic acid, trimellitic acid, and combinations thereof; (ii) a second acid selected from the group consisting of succinic acid, glutaric acid, adipic acid, pimelic acid, suberic acid, azelaic acid, sebacic acid, maleic acid, fumaric acid, cyclohexane dicarboxylic acid, cyclohexene dicarboxylic acid, cyclohexadiene dicarboxylic acid, endomethylene hexahydrophthalic acid, cyclohexane tricarboxylic acid, anhydrides thereof, esters thereof with an alcohol containing from 1 to about 5 carbon atoms, phthalic acid, o-phthalic acid, isophthalic acid, terephthalic acid, trimellitic acid, and combinations thereof; and (iii) at least one alcohol, the adhesive having a melt viscosity of 500 to 25,000 mPas (Brookfield RVT DVII, 140°C, spindle 27) and a softening point of 70 to 100°C (ASTM E28).

Rather, Miller discloses *sulfonate-containing, water-dispersible* adhesive compositions having a number average molecular weight from about 2,000 to about 20,000 formed from either a single polyester, or a blend of polyesters. When forming the blend of polyesters, Miller requires that one of components of each of the polyesters be formed from a dicarboxylic acid containing a metal sulfonate group. It is well established that in a composition claim, the phrase "consisting essentially of" limits the scope of the claim to the specific ingredients and those that do not materially affect the basic and novel characteristic(s) of the composition". *Atlas Powder Co. v. I.E. Du Pont De Nemours & Co.*, 750 F.2d 1569, 1573-74, 224 USPQ 409,



411 (Fed. Cir. 1984). To produce the adhesive composition of Miller, the blend of polyesters must be formed with one of the components of each of the polyesters containing a difunctional dicarboxylic acid which is not a sulfomonomer and another component of each of the polyesters containing a difunctional sulfomonomer in order to provide a water-dispersible adhesive composition. Thus, the addition of the sulfomonomer component to each of the polyesters of Miller to form the water-dispersible adhesive blend composition unquestionably materially affects the basic and novel characteristics of Miller's adhesive composition by *absolutely* requiring the inclusion of the material sulfomonomer to each of the polyesters to form the adhesive blend.

Applicants instead form an adhesive composition from component A having a total enthalpy of fusion of at most 20 mJ/mg and comprising at least one aromatic-containing polyester with a molecular weight ( $M_n$ ) of at least 8000 *consisting essentially of* the first and second acids of the specifically recited Markush groups and at least one alcohol and component B having a glass transition temperature of at most 60°C and comprising at least one polyester with a molecular weight ( $M_n$ ) of less than 8000 *consisting essentially of* the first and second acids of the specifically recited Markush groups and at least one alcohol. Applicants adhesive composition is biodegradable and to be used in such applications as, for example, medical articles such as bandages and sanitary articles such as diapers. Thus the addition of other components to the specifically recited components of the polyesters presently set forth in the new claims would affect its utility as an adhesive, i.e., the sulfomonomers of the Miller reference. Accordingly, new Claims 48-50 are believed to be patentable over Miller.

For the foregoing reasons, amended Claims 1 and 19-47 and new Claims 48-50 are believed to be patentable over Miller and withdrawal of the rejection under 35 U.S.C. §103(a) is respectfully requested.

In view of the foregoing, amended Claims 1 and 19-47 and new Claims 48-50 as presented herein are believed to be in condition for allowance. Such early and favorable action is earnestly solicited.

Respectfully submitted,



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## APPENDIX A

1. (Twice Amended) An adhesive composition comprising [components A and B] component A having a total enthalpy of fusion of at most 20 mJ/mg and component B having a glass transition temperature of at most 60°C wherein

a) component A comprises at least one aromatic-containing polyester with a molecular weight ( $M_n$ ) of at least 8000; [and has a total enthalpy of fusion of at most 20 mJ/mg] and

b) component B comprises at least one polyester with a molecular weight ( $M_n$ ) of less than 8000 [and a glass transition temperature of at most 60°C], the adhesive having a melt viscosity of 500 to 25,000 mPas (Brookfield RVT DVII, 140°C, spindle 27) and a softening point of 70 to 100°C (ASTM E28).

30. (Twice Amended) A method of making a composite material comprising at least two substrates, the method comprising:

providing an adhesive composition comprising [components A and B] component A having a total enthalpy of fusion of at most 20 mJ/mg and component B having a glass transition temperature of at most 60°C, wherein

a) component A comprises at least one aromatic-containing polyester with a molecular weight ( $M_n$ ) of at least 8000; [and has a total enthalpy of fusion of at most 20 mJ/mg] and

b) component B comprises at least one polyester with a molecular weight ( $M_n$ ) of less than 8000 [and a glass transition temperature of at most 60°C], the adhesive having a melt viscosity of 500 to 25,000 mPas (Brookfield RVT DVII, 140°C, spindle 27) and a softening point of 70 to 100°C (ASTM E28),

applying the adhesive to at least part of a first substrate; and,

contacting a second substrate with the adhesive applied to the first substrate.

35. (Twice Amended) A composite comprising:

an adhesive composition sandwiched between a first and second substrate, the adhesive comprising [components A and B] component A having a total enthalpy of fusion of at most 20 mJ/mg and component B having a glass transition temperature of at most 60°C in which

a) component A comprises at least one aromatic-containing polyester with a molecular weight ( $M_n$ ) of at least 8000; [and has a total enthalpy of fusion of at most 20 mJ/mg] and

b) component B comprises at least one polyester with a molecular weight ( $M_n$ ) of less than 8000 [and a glass transition temperature of at most 60°C], the adhesive having a melt viscosity of 500 to 25,000 mPas (Brookfield RVT DVII, 140°C, spindle 27) and a softening point of 70 to 100°C (ASTM E28).

Claims 48-50 are newly added.